

Summary of the PM_{2.5} Designations Technical Support Documentation: Justification for Sub-County Boundaries in the Vicinity of the Violating Monitors

The weight of evidence justifies sub-county scale boundaries in both Scott and Muscatine counties and justifies the complete exclusion of Rock Island County. These conclusions are based on the evaluation of air quality data, emissions inventory information, meteorology, and modeling. The sub-county boundaries would include sources that influence PM_{2.5} concentrations at the violating monitors.

Scott County Non-attainment Area

- Direct PM_{2.5} emissions from Rock Island point sources do not influence PM_{2.5} concentrations in the impact area around the Blackhawk Foundry monitor. Direct PM_{2.5} sources in Davenport located outside of the nonattainment boundaries proposed by IDNR in Scott County also do not influence PM_{2.5} concentrations in the impact area around the Blackhawk Foundry monitor. These findings are demonstrated by local (AERMOD) modeling.
- AERMOD predictions correlate well with monitored values at the Blackhawk Foundry monitor on exceedance days. Direct PM_{2.5} emissions from the Blackhawk Foundry are the primary contributor to measured values at this monitor during local exceedance events.
- Two PM_{2.5} monitors in Scott County, at Adams School and 10th & Vine, are attaining the standard. These actual measurements show that most of Scott County, outside of the areas near Blackhawk Foundry, are not significantly impacted by either Blackhawk Foundry or other sources in EPA's proposed nonattainment area.
- Regional (photochemical) modeling simulations show that precursor emissions of NO_x and SO₂ from sources in Rock Island County and Scott County do not influence the PM_{2.5} concentrations predicted at the grid cell containing the violating monitor.
- Longer range transport from areas outside of Scott, Muscatine, and Rock Island counties is predominantly responsible for nearly all of the secondarily formed sulfate and nitrate PM_{2.5} concentrations in the impact area of the violating monitor.

Muscatine County Non-attainment Area

- AERMOD predictions indicate that local PM_{2.5} exceedance events at the Garfield School monitor result from PM_{2.5} emissions originating from Grain Processing Corporation.
- Photochemical modeling simulations show that precursor emissions of NO_x and SO₂ from sources in Muscatine County do not influence the PM_{2.5} concentrations predicted at the grid cell containing the violating monitor.
- Longer range transport from areas outside of Scott, Muscatine, and Rock Island counties is predominantly responsible for nearly all of the secondarily formed sulfate and nitrate PM_{2.5} concentrations in the impact area of the violating monitor.